PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Artcle 36 and Rule 70)

Applicant's or agent's file reference				
OP03-0149	FOR FURTHER ACT	ION	See Form PCT/IPEA/416	
International application No.	International filing date(da	ty/month/year)	Priority date (day/month/year)	
PCT/KR2004/000251	09 FEBRUARY 200	4 (09.02.2004)	26 NOVEMBER 2003 (26.11.2003)	
International Patent Classification (IPC) or national classification and IPC A61K 36/489(2006.01)i, A23L 1/29(2006.01)i, A61P 19/00(2006.01)i				
Applicant REXGENEBIOTECH CO., L	TD. et al		,	
This report is the international pre Authority under Article 35 and tra			nternational Preliminary Examining	
2. This REPORT consists of a total	of 5 sheets, in	ncluding this cover sh	eet.	
sheets of the desc and/or sheets com Administrative In sheets which supe beyond the disclo Supplemental Box b. (sent to the International containing a sequence lis	to the International Bureau cription, claims and/or drawitaining rectifications authoristructions). ersede earlier sheets, but whisure in the international applications. I Bureau only) a total of (ind.)	ngs which have been zed by this Authority constitution as filed, as included type and numbereto, in electronic for	amended and are the basis for this report (see Rule 70.16 and Section 607 of the siders contain an amendment that goes dicated in item 4 of Box No. 1 and the r of electronic carrier(s)), rm only, as indicated in the Supplemental	
Box No. IV Lack of unit Box No. V Reasoned so citations and Box No. VI Certain doct Box No. VII Certain defer	shment of opinion with regar ty of invention tatement under Article 35(2) explanations supporting suc	rd to novelty, inventive with regard to novelth statement	ve step and industrial applicability ty, inventive step or industrial applicability;	
Date of submission of the demand		Pate of completion of	this report	
26 SEPTEMBER 2005			2006 (08.03.2006)	
Name and mailing address of the IPEA/KR		authorized officer	:	
Korean Intellectual Property 920 Dunsan-dong, Seo-gu, I Republic of Korea	Office	YEO, Ho Sup		
Facsimile No. 82-42-472-7140		elephone No. 82-42	-481-5627	

International application No.

PCT/KR2004/000251

Box No	. I Basis of the report		<u></u>
	ith regard to the language, this report is based on the intenerwise indicated under this item.		
L	This report is based on translations from the original		anguage
	which is the language of a translation furnished for th		
	international search (under Rules 12.3 and 23.1		
	publication of the international application (unc		
	international preliminary examination (under R	ules 55.2 and/or 55.3)	
to th	n regard to the elements of the international application, the receiving Office in response to an invitation under Articized to this report): the international application as originally filed/furnished	cle 14 are referred to in this	
\boxtimes	the description:		
	pages 1-53	to diterate Analogia	as originally filed/furnished
	· · ·	eived by this Authority on eived by this Authority on	
	pugesicc	cived by una reducinty on	·
\boxtimes	the claims:		
	pages		as originally filed/furnished
	pages*		er with any statment) under Article 19 26/09/2005
		eived by this Authority on	23/07/2003
K-21			
. 🛛	the drawings:	,	
	pages	eived by this Authority on	as originally filed/furnished
		eived by this Authority on	
3.	The amendments have resulted in the cancellation of: the description, pages the claims, Nos. 9, 14 the drawings, sheets the sequence listing (specify): any table(s) related to sequence listing (specify):		
4.	This report has been established as if (some of) the ame made, since they have been considered to go beyond the (Rule 70.2(c)). the description, pages the claims, Nos. the drawings, sheets the sequence listing (specify): any table(s) related to sequence listing (specify):	disclosure as filed, as indica	ated in the Supplemental Box
* If item	4 applies, some or all of those sheets may be marked "su	perseded."	

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrial applicable have not been examined in respect of:
the entire international application,
Claims Nos7, 8, 10-13
because: the said international application, or the said claims Nos. 7, 8, 10-13 relate to the following subject matter which does not require an international preliminary examination (specify):
The subject-matter of claims 7, 8 and 10-13 does not require an international preliminary examination with respect to industrial applicability, as it is directed to a method for treatment of the human or animal body by therapy (PCT Article 34(4)(a)(i) and Rule 67.1(iv)).
the description, claims or drawings (indicate particular elements below) or said claims Nos are so unclear that no meaningful opinion could be formed (specify):
the claims, or said claims Nos. are so inadequately supported
by the description that no meaningful opinion could be formed (specify):
·
no international search report has been established for said claims Nos.
a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:
furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Istructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Istructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it. pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule
13ter.1(a) or (b) and 13ter.2.
a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-bis of the Administrative Instructions, and such tables were not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.
See Supplemental Box for further details.

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
	citations and explanations supporting such statement

Novelty (N)	Claims	1-6, 15	YES
	Claims		N0
Inventive step (IS)	Claims	1-6, 15	YES
	Claims	· .	NO
Industrial applicability (IA)	Claims	1-6, 15	YES
	Claims	•	NO

2. Citations and explanations (Rule 70.7)

The present invention relates to a composition for preventing or treating metabolic bone disease, comprising a hot water extract of Sophorae Fructus as an active ingredient.

The following documents have been considered for the purpose of this report:

D1 = US 2003/0180394 A1 (25.09.2003)

D2 = KR 2002 - 0044745 A (19.06.2002)

D1 states that the extracts of roots of Sophora species are effective for the prophylaxis and therapy of pathological conditions caused by estrogen deficiency, in particular osteoporosis.

D2 states that an extract of Sophorae Flos contains a large amount of phytoestrogen and can be used as a therapeutic agent for osteoporosis.

Even though D1 and D2 are relevant to the present invention, none of them teach or fairly suggest that a hot water extract of Sophorae Fructus would be useful for preventing or treating metabolic bone disease.

As a consequence, claims 1-6 and 15 meet the criteria set out in PCT Article 33(2)-(4).

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Supplemental Box Relating to Sequence Listing			
Continuati	on of Box No. I, item 2:		
	ard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed, this report was established on the basis of:		
a. type o	of material		
\boxtimes	a sequence listing		
	table(s) related to the sequence listing		
b. forma	t of material		
\boxtimes	on paper		
\boxtimes	in electronic form		
c. time o	f filing/furnishing		
\boxtimes	contained in the international application as filed		
\boxtimes	filed together with the international application in electronic form		
	furnished subsequently to this Authority for the purposes of search and/or examination		
	received by this Authority as an amendment* on		
2. In a	ddition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed		
	urnished, the required statements that the information in the subsequent or additional copies is identical to that in the		
арр	lication as filed or does not go beyond the application as filed, as appropriate, were furnished.		
2 Additions	I comments:		
3. Additiona	1 continents.		
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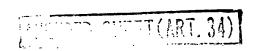
PCT/KR 2004 / 0 0 0 2 5 1 IPEA/KR 2 6, 0 9, 2005.

IAPO Rec'd PCT/PTO 25 MAY 2006

WHAT IS CLAIMED IS:

- 1. (Amended) A pharmaceutical composition for preventing or treating metabolic bone disease comprising a hot water extract of *Sophorae Fructus* as an effective ingredient.
- 2. (Amended) The pharmaceutical composition of claim 1, wherein said hot water extract of *Sophorae Fructus* is prepared by the steps of:
 - (a) adding water to the Sophorae Fructus powder, wherein the amount of water is 3 to 20 times as much as the weight of Sophorae Fructus powder; and
 - (b) hydrothermal extracting the composition of step (a) for 1 to 6 hours to obtain the hot water extract of Sophorae Fructus.
- 3. (Amended) The pharmaceutical composition of claim 1, wherein said hot water extract of Sophorae Fructus is prepared by the steps of:
 - (a) adding water to the *Sophorae Fructus* powder, wherein the amount of water is 3 to 20 times as much as the weight of *Sophorae Fructus* powder;
 - (b) hydrothermal extracting the composition of step (a) for 1 to 6 hours to obtain the hot water extract of Sophorae Fructus; and
 - (c) adding amylase or pectinase to the hot water extract of Sophorae Fructus of the step (b) by $0.01 \sim 1\%(v/v)$, and reacting for $4 \sim 24$ hours.
 - 4. (Amended) The pharmaceutical composition of claim 1, wherein the

54 AMENDED SHEET



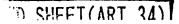
metabolic bone disease is selected from the group consisting of osteoporosis, lumbago, rheumatoid arthritis, degenerative arthritis, rickets, osteomalacia and Paget's disease of bone.

- 5. (Amended) A food composition for preventing or improving metabolic bone disease comprising a hot water extract of *Sophorae Fructus* as an effective ingredient.
- 6. (Amended) The food composition of claim 5, wherein the metabolic bone disease is selected from the group consisting of osteoporosis, lumbago, rheumatoid arthritis, degenerative arthritis, rickets, osteomalacia and Paget's disease of bone.
- 7. (Amended) A method of preventing or treating metabolic bone disease, which comprises administering a pharmaceutical composition comprising a hot water extract of *Sophorae Fructus* to a subject.
- 8. (Amended) The method of claim 7, wherein the metabolic bone disease is selected from the group consisting of osteoporosis, lumbago, rheumatoid arthritis, degenerative arthritis, rickets, osteomalacia and Paget's disease of bone.

9. (Cancelled)

10. (Amended) The method of claim 7, wherein the metabolic bone disease is prevented or treated by stimulating the osteoblast proliferation, the secretion of a

55 AMENDED SHEET



growth factor involved in bone reformation, and the generation of nitric oxide in the osteoblast by the administration of the pharmaceutical composition comprising the hot water extract of *Sophorae Fructus* to a subject.

- 11. The method of claim 10, wherein the growth factor involved in bone reformation is IGF-1 or TGF- β .
- 12. (Amended) The method of claim 7, wherein the metabolic bone disease is prevented or treated by inhibiting the secretion of bone-absorptive cytokines or the osteoclast differentiation by the administration of the pharmaceutical composition comprising the hot water extract of *Sophorae Fructus* to a subject.
- 13. The method of claim 12, wherein the bone-absorptive cytokine is IL-1 beta or IL-6.
 - 14. (Cancelled)
- 15. (Amended) Use of a hot water extract of Sophorae Fructus for the preparation of a medicament for preventing or treating metabolic bone disease.

56 AMENDED SHEET

MDED SHEET (ART. 34)

57 DELETED

AMENDED SHEET (ART 34)